

# PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2003-012442  
(43)Date of publication of application : 15.01.2003

(51)Int.Cl. A61K 7/00  
A61K 7/48

(21)Application number : 2001-202880 (71)Applicant : IDEMITSU TECHNOFINE CO LTD  
(22)Date of filing : 04.07.2001 (72)Inventor : FUKATSU FUMIOKI  
TAGUCHI TOSHIHARU

## (54) COSMETIC HAVING MOISTURE-RETAINING PROPERTY

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To provide a cosmetic which is not sticky, when used, has good affinity to skins and hair, has a good moisture-retaining effect, and has a good moist touch.

**SOLUTION:** This cosmetic is characterized by containing a poly- $\gamma$ -glutamic acid cross linked product having a gel rate of 20 to 100% as a moisturizing agent. The cosmetic is widely used in a cosmetic field such as skin cosmetics, hair cosmetics and makeup cosmetics and in a toiletry field such as a bath article.

## LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

Copyright (C); 1998,2003 Japan Patent Office

**BEST AVAILABLE COPY**

\* NOTICES \*

JPO and NCIP are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

---

CLAIMS

---

[Claim(s)]

[Claim 1] The charge of makeup characterized by doing 0.001-5 mass % content of the Polly gamma-glutamic-acid bridge formation object of 20 - 100% of rates of gelation as a moisturizer.

[Claim 2] The charge of makeup according to claim 1 manufactured by carrying out radiation-induced crosslinking of the solution with which the Polly gamma-glutamic-acid bridge formation object dissolved Polly gamma-glutamic acid in at least one sort of solvents chosen from water, methyl alcohol, and ethyl alcohol.

[Claim 3] The charge of makeup according to claim 2 whose radiation is an electron ray.

---

[Translation done.]

\* NOTICES \*

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

---

DETAILED DESCRIPTION

---

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the charge of makeup which was excellent in moistness in detail about the charge of makeup used in the toiletries fields, such as cosmetics, such as a charge of skin makeup, a charge of hair makeup, and a charge of makeup makeup, and a bathing agent.

[0002]

[Description of the Prior Art] A moisturizincency effect is required for the charge of makeup makeup and bathing agents, such as charges of hair makeup, such as charges of skin makeup, such as face toilet, a milky lotion, a cream, and a pack, a shampoo, a rinse, a hair cream, and a hair set, foundation, a lip stick, and eye shadow. Blending a moisturizer with the skin and hair is widely performed to face toilet, facial cream, the hair cream, the hair rinse, and the bathing agent. Moreover, in order to stop admiration with feeling in big trouble [ with bulk ] and to give admiration gently, with moisture held, various kinds of moisturizers are used for the skins, such as a lotion for the skins, a cream, a shampoo for the hairs, and a rinse, and the charge for hair of makeup.

[0003] Although there is a class which sets the organic substance and an inorganic substance by the high matter of moisture absorption capacity, or becomes, the class of moisturizer actually used from needs, like the effect of safety or the gestalt stability on a product is low is restricted. As a property which should furthermore be equipped with a moisturizer, the capacity which absorbs moisture, and the capacity which prevents evaporation of moisture to coincidence are searched for. In many cases, it compounds and the moisturizer generally used is used, in order to make many of these properties into a necessary thing. However, since hygroscopic big matter, such as sodium lactate, is electrolytes, it has the property which is not desirable on product combination of an emulsification inhibition operation etc., and the amount used and an application are restricted. On the other hand, although polyols, such as a glycerol, a sorbitol, and propylene glycol, have comparatively good moistness, it is easy to produce stickiness for a product, and when it uses for cosmetics etc., a difficulty is in a feeling of use. Although the approaches (JP,61-33107,A, JP,10-251402,A, etc.) of blending the Pori aspartic acid and amino acid ester with the charge of makeup had the moisturizincency effect, they were what cannot say gently that admiration is enough but has a feeling of stickiness.

[0004]

[Problem(s) to be Solved by the Invention] From the situation like \*\*\*\*, its concordance to the skin or hair is good, it has a moisturizincency effect, and is to offer the good charge of makeup of admiration gently while the purpose of this invention does not have the stickiness at the time of use.

[0005]

[Means for Solving the Problem] In order to attain the above-mentioned purpose, as a result of repeating research wholeheartedly, by carrying out little addition of the Polly gamma-glutamic-acid bridge formation object of 20 - 100% of rates of gelation as a moisturizer, this invention persons do not have the stickiness at the time of use, and reached [ that the good charge of

makeup of a moisturizer effect is obtained, and ] a header and invention. That is, this invention offers the following charges of makeup.

[1] The charge of makeup characterized by doing 0.001-5 mass % content of the Polly gamma-glutamic-acid bridge formation object of 20 - 100% of rates of gelation as a moisturizer.

[2] The charge of makeup of [1] manufactured by carrying out radiation-induced crosslinking of the solution with which the Polly gamma-glutamic-acid bridge formation object dissolved Polly gamma-glutamic acid in at least one sort of solvents chosen from water, methyl alcohol, and ethyl alcohol.

[3] The charge of makeup of [2] whose a radiation is an electron ray.

[0006]

[Embodiment of the Invention] About the Polly gamma-glutamic acid used for the raw material of a moisturizer by this invention, there is especially no limit and what is depended on the various manufacture approaches is used. For example, there are the cultivation by the microorganism, i.e., the cultivation by the *Bacillus subtilis*, cultivation by the transgenics microorganism, the approach of adjusting from fermented soybeans, a chemosynthesis method, etc. although all are usable if it is the strain which generates Polly gamma-glutamic acid out of a fungus body when manufacturing Polly gamma-glutamic acid by the cultivation by the microorganism -- especially -- punishment -- a lath group strain is desirable. as a concrete example -- punishment -- lath ZUBUCHIRUSU and punishment -- lath anthra cis- \*\* -- punishment -- lath NATTOU etc. is used. especially -- punishment -- what has millions or more molecular weight produced by microorganism like lath *Subtilis* is desirable (JP,1-174397,A).

[0007] In the cultivation of a microorganism, if Polly gamma-glutamic acid is produced, what kind of thing is sufficient as strain, a culture medium, etc. if it is the culture medium which contains suitably the nutriment of a carbon source, a nitrogen source, and an inorganic substance and others as a culture medium -- a synthetic medium and a natural medium -- either can be used. As addition amino acid, these salts, such as L-glutamic acid, an aspartic acid, an alanine, a leucine, a phenylalanine, and a histidine, can be used, and it is L-glutamic acid preferably, and is 3 - 10% preferably 2 to 12%.

[0008] As a carbon source, although a glucose, sucrose, a citric acid, or a xylose can be used, they are a citric acid or a glucose preferably. As a nitrogen source, inorganic nutrient, such as sources of heterotrophism, such as a peptone or a yeast extract, and an ammonium sulfate, etc. can be used. Culture is performed under aerobic conditions, such as shaking culture or spinner culture, and 25-45 degrees C of culture temperature are 30-40 degrees C preferably. pH at the time of culture -- 5-9 -- it is 6-8 preferably and a sodium hydroxide, a potassium hydroxide, etc. perform pH adjustment at the time of culture.

[0009] Polly gamma-glutamic acid is usually accumulated for culture time amount out of a fungus body in 48 - 72 hours. The Polly gamma-glutamic acid in the culture medium after culture termination is recoverable by the approach currently performed from the former. That is, the filter filtration which has centrifugal separation, a filter aid, or micropore can remove a fungus body, and Polly gamma-glutamic acid can be collected by carrying out an ultrafiltration. Moreover, the ethanol of an amount etc. is added three to 4 times, and Polly gamma-glutamic acid is settled. Precipitate is dissolved in water, insoluble matter is removed, with dialysis or an ultrafiltration, except for a low-molecular-weight object, reprecipitation can be repeated by ethanol etc. and Polly gamma-glutamic acid can be collected.

[0010] The Polly gamma-glutamic-acid bridge formation object used for a moisturizer by this invention is acquired by carrying out separation purification of the bridge formation object with which Polly gamma-glutamic acid generated in the solvent the Polly gamma-glutamic acid obtained by cultivation, a chemosynthesis method, etc. by the microorganism like the above after having dissolved so that it might become 5 - 15 mass % preferably, and carrying out radiation irradiation of this solution, two to 20 mass %, and. Although an acetone besides water and alcohol, methyl acetate, ethyl acetate, etc. are used as a solvent, water, methyl alcohol, and ethyl alcohol are desirable, and especially water is desirable.

[0011] As for the solution which dissolved Polly gamma-glutamic acid, a radiolucency container, for example, a glass vial bottle etc., is used. Although there is no limit, for example, there are

alpha rays, beta rays, gamma ray, an electron ray, a neutron beam, an X-ray, etc. especially about a radiation, it is an electron ray preferably. Although the quantity of radiation of the electron ray to irradiate changes somewhat with conditions, such as water absorption which it is going to acquire, 20 or more kGies usually have desirable quantity of radiation. Since irradiation time may fully be unable to form a bridge formation object in less than 1 second, it is desirable to irradiate at least 1 second or more.

[0012] The Polly gamma-glutamic-acid bridge formation object of the desired rate of gelation can be acquired by the approach by such electron beam irradiation. The rate of gelation of the Polly gamma-glutamic-acid bridge formation object used for a moisturizer by this invention is 60 - 100% still more preferably 40 to 100% preferably 20 to 100%. If the rate of gelation is lower than 20%, moistness will not be enough and productivity will also fall. In addition, the rate of gelation used by this invention means the percentage of the dry mass of the numeric value which broke the dry mass of the moisturizer which consists of a Polly gamma-glutamic-acid bridge formation object by the amount of the Polly gamma-glutamic acid used for electron beam irradiation, i.e., the moisturizer which consists of a Polly gamma-glutamic-acid bridge formation object over the amount of preparation Polly gamma-glutamic acid.

[0013] Then, the Polly gamma-glutamic-acid bridge formation object which is a solid can be acquired by removing water. This Polly gamma-glutamic-acid bridge formation object is transparent and colorless, is excellent in absorptivity, and also has biodegradability. The Polly gamma-glutamic-acid bridge formation object acquired by the above approach may be corned by the predetermined configuration, and may be a letter of indeterminate form crushing, and spherical \*\*.

[0014] The Polly gamma-glutamic-acid bridge formation object used for a moisturizer by this invention is widely used for face toilet, a milky lotion, cold cream, a hand cream, a lip stick, eye shadow, a hair spray, a tonic, a charge for a haircut, a shampoo, a rinse, Parma liquid, a sweat picking agent, a bathing agent, etc. the addition of a Polly gamma-glutamic-acid bridge formation object -- usually -- 0.001 to 5 mass % -- it is 0.05 to 2.5 mass % preferably. If there are few additions than 0.001 mass %, a moisturizincy effect is not enough, and since it is sticky when [ than 5 mass % ] more, and it is easy to generate admiration, it is not desirable.

[0015] Even if the Polly gamma-glutamic-acid bridge formation object used for a moisturizer by this invention uses together gold [ SORUBI / other moisturizers, for example, propylene glycol, and ], an amine acid, sodium lactate, etc., it does not have effectiveness spoiled. Moreover, as for the Polly gamma-glutamic-acid bridge formation object used for a moisturizer by this invention, alkali-metal salts, such as sodium, a potassium, and a lithium, ammonium salt, an ethanolamine salt, a diethanolamine salt, a triethanolamine salt, a basic amine salt, etc. are contained.

[0016]

[Example] Although an example etc. explains this invention further below at a detail, this invention is not restricted at all by these.

[0017] It is one week about the processing object which irradiated for a total of 12 seconds, and was obtained so that the water solution of 10 mass % of example of manufacture 1 Meiji gamma-PGA (Polly [ by Meiji Seika Kaisha, Ltd. ] gamma-glutamic acid) was put into a glass tray, and it might be set the irradiation range of 10cm with Cockcroft UORUTON mold electron-beam-irradiation equipment and might be set to exposure 30kGY in 2.5kGy/1sec. It was immersed in 4-degree C water, and Polly gamma-glutamic acid non-constructed a bridge was removed. The Polly gamma-glutamic-acid gel which absorbed and swelled water was freeze-dried after filtration at the wire gauze of 80 meshes, and the Polly gamma-glutamic-acid bridge formation object of 91% of rates of gelation was acquired. In addition, the rate of gelation is a ratio of the dry mass of the Polly gamma-glutamic-acid gel which might receive the mass of preparation Polly gamma-glutamic acid.

[0018] It blended with the Polly gamma-glutamic-acid bridge formation object acquired in examples 1-2, the example 1 of a comparison - the example 1 of 2 manufactures at a predetermined mass rate which shows water, ethyl alcohol, and perfume in the 1st table, and the makeup agent for the skins was manufactured. This makeup agent for the skins was gently

reached admiration and spreading desiccation and by the following evaluation basis at the skin, and admiration was evaluated in the least. A result is shown in the 1st table.

A: Gently with those with admiration, and no stickiness.

B: They are those with admiration, and those with stickiness gently.

C: Admiration and stickiness are nothing gently.

[0019] Meiji gamma-PGA was used instead of the example of comparison 3 Polly gamma-glutamic-acid bridge formation object, and it carried out like the example 1. A result is shown in the 1st table.

[0020]

[Table 1]

第1表

	実施例1	実施例2	比較例1	比較例2	比較例3
(配合量: 質量%)					
水	89.4	89.0	83.5	89.5	89.4
エチルアルコール	10.0	10.0	10.0	10.0	10.0
香料	0.5	0.5	0.5	0.5	0.5
ポリγグルタミン酸架橋体	0.1	0.5	6.0	—	0.1(未架橋物)
評価結果	A	A	B	C	C

[0021]

[Effect of the Invention] The charge of makeup which has admiration gently and does not have stickiness can be easily obtained by using a Polly gamma-glutamic-acid bridge formation object for a moisturizer by this invention so that clearly also from the above example. The Polly gamma-glutamic-acid bridge formation object used for a moisturizer by this invention has the moisturizency effect which was excellent with the little addition to the charge of makeup, and since the concordance to the skin or hair is good and biodegradability, it is widely used for face toilet, a milky lotion, cold cream, a hand cream, a lip stick, eye shadow, a hair spray, a tonic, a charge for a haircut, a shampoo, a rinse, Parma liquid, a sweat picking agent, a bathing agent, etc.

[Translation done.]

**\* NOTICES \***

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.\*\*\* shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

---

**TECHNICAL FIELD**

---

[Field of the Invention] This invention relates to the charge of makeup which was excellent in moistness in detail about the charge of makeup used in the toiletries fields, such as cosmetics, such as a charge of skin makeup, a charge of hair makeup, and a charge of makeup makeup, and a bathing agent.

---

[Translation done.]

\* NOTICES \*

JPO and NCIP are not responsible for any damages caused by the use of this translation.

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.\*\*\*\* shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

---

PRIOR ART

---

[Description of the Prior Art] A moisturizincy effect is required for the charge of makeup makeup and bathing agents, such as charges of hair makeup, such as charges of skin makeup, such as face toilet, a milky lotion, a cream, and a pack, a shampoo, a rinse, a hair cream, and a hair set, foundation, a lip stick, and eye shadow. Blending a moisturizer with the skin and hair is widely performed to face toilet, facial cream, the hair cream, the hair rinse, and the bathing agent. Moreover, in order to stop admiration with feeling in big trouble [ with bulk ] and to give admiration gently, with moisture held, various kinds of moisturizers are used for the skins, such as a lotion for the skins, a cream, a shampoo for the hairs, and a rinse, and the charge for hair of makeup.

[0003] Although there is a class which sets the organic substance and an inorganic substance by the high matter of moisture absorption capacity, or becomes, the class of moisturizer actually used from needs, like the effect of safety or the gestalt stability on a product is low is restricted. As a property which should furthermore be equipped with a moisturizer, the capacity which absorbs moisture, and the capacity which prevents evaporation of moisture to coincidence are searched for. In many cases, it compounds and the moisturizer generally used is used, in order to make many of these properties into a necessary thing. However, since hygroscopic big matter, such as sodium lactate, is electrolytes, it has the property which is not desirable on product combination of an emulsification inhibition operation etc., and the amount used and an application are restricted. On the other hand, although polyols, such as a glycerol, a sorbitol, and propylene glycol, have comparatively good moistness, it is easy to produce stickiness for a product, and when it uses for cosmetics etc., a difficulty is in a feeling of use. Although the approaches (JP,61-33107,A, JP,10-251402,A, etc.) of blending the Pori aspartic acid and amino acid ester with the charge of makeup had the moisturizincy effect, they were what cannot say gently that admiration is enough but has a feeling of stickiness.

---

[Translation done.]



\* NOTICES \*

JPO and NCIP I are not responsible for any damages caused by the use of this translation.

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.\*\*\*\* shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

---

EFFECT OF THE INVENTION

---

[Effect of the Invention] The charge of makeup which has admiration gently and does not have stickiness can be easily obtained by using a Polly gamma-glutamic-acid bridge formation object for a moisturizer by this invention so that clearly also from the above example. The Polly gamma-glutamic-acid bridge formation object used for a moisturizer by this invention has the moisturizincy effect which was excellent with the little addition to the charge of makeup, and since the concordance to the skin or hair is good and biodegradability, it is widely used for face toilet, a milky lotion, cold cream, a hand cream, a lip stick, eye shadow, a hair spray, a tonic, a charge for a haircut, a shampoo, a rinse, Parma liquid, a sweat picking agent, a bathing agent, etc.

---

[Translation done.]

\* NOTICES \*

JPO and NCIP I are not responsible for any damages caused by the use of this translation.

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.\*\*\*\* shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

---

TECHNICAL PROBLEM

---

[Problem(s) to be Solved by the Invention] From the situation like \*\*\*\*, its concordance to the skin or hair is good, it has a moisturizincy effect, and is to offer the good charge of makeup of admiration gently while the purpose of this invention does not have the stickiness at the time of use.

---

[Translation done.]

## \* NOTICES \*

JPO and NCIP are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

## MEANS

[Means for Solving the Problem] In order to attain the above-mentioned purpose, as a result of repeating research wholeheartedly, by carrying out little addition of the Polly gamma-glutamic-acid bridge formation object of 20 - 100% of rates of gelation as a moisturizer, this invention persons do not have the stickiness at the time of use, and reached [ that the good charge of makeup of a moisturizincy effect is obtained, and ] a header and this invention. That is, this invention offers the following charges of makeup.

[1] The charge of makeup characterized by doing 0.001-5 mass % content of the Polly gamma-glutamic-acid bridge formation object of 20 - 100% of rates of gelation as a moisturizer.

[2] The charge of makeup of [1] manufactured by carrying out radiation-induced crosslinking of the solution with which the Polly gamma-glutamic-acid bridge formation object dissolved Polly gamma-glutamic acid in at least one sort of solvents chosen from water, methyl alcohol, and ethyl alcohol.

[3] The charge of makeup of [2] whose a radiation is an electron ray.

[0006]

[Embodiment of the Invention] About the Polly gamma-glutamic acid used for the raw material of a moisturizer by this invention, there is especially no limit and what is depended on the various manufacture approaches is used. For example, there are the cultivation by the microorganism, i.e., the cultivation by the Bacillus subtilis, cultivation by the transgenics microorganism, the approach of adjusting from fermented soybeans, a chemosynthesis method, etc. although all are usable if it is the strain which generates Polly gamma-glutamic acid out of a fungus body when manufacturing Polly gamma-glutamic acid by the cultivation by the microorganism -- especially -- punishment -- a lath group strain is desirable. as a concrete example -- punishment -- lath ZUBUCHIRUSU and punishment -- lath anthra cis- \*\* -- punishment -- lath NATTOU etc. is used. especially -- punishment -- what has millions or more molecular weight produced by microorganism like lath Subtilis is desirable (JP,1-174397,A).

[0007] In the cultivation of a microorganism, if Polly gamma-glutamic acid is produced, what kind of thing is sufficient as strain, a culture medium, etc. if it is the culture medium which contains suitably the nutriment of a carbon source, a nitrogen source, and an inorganic substance and others as a culture medium -- a synthetic medium and a natural medium -- either can be used. As addition amino acid, these salts, such as L-glutamic acid, an aspartic acid, an alanine, a leucine, a phenylalanine, and a histidine, can be used, and it is L-glutamic acid preferably, and is 3 - 10% preferably 2 to 12%.

[0008] As a carbon source, although a glucose, sucrose, a citric acid, or a xylose can be used, they are a citric acid or a glucose preferably. As a nitrogen source, inorganic nutrient, such as sources of heterotrophism, such as a peptone or a yeast extract, and an ammonium sulfate, etc. can be used. Culture is performed under aerobic conditions, such as shaking culture or spinner culture, and 25-45 degrees C of culture temperature are 30-40 degrees C preferably. pH at the time of culture -- 5-9 -- it is 6-8 preferably and a sodium hydroxide, a potassium hydroxide, etc. perform pH adjustment at the time of culture.

[0009] Polly gamma-glutamic acid is usually accumulated for culture time amount out of a fungus body in 48 - 72 hours. The Polly gamma-glutamic acid in the culture medium after culture

termination is recovered by the approach currently performed the former. That is, the filter filtration which has centrifugal separation, a filter aid, or micropore can remove a fungus body, and Polly gamma-glutamic acid can be collected by carrying out an ultrafiltration. Moreover, the ethanol of an amount etc. is added three to 4 times, and Polly gamma-glutamic acid is settled. Precipitate is dissolved in water, insoluble matter is removed, with dialysis or an ultrafiltration, except for a low-molecular-weight object, reprecipitation can be repeated by ethanol etc. and Polly gamma-glutamic acid can be collected.

[0010] The Polly gamma-glutamic-acid bridge formation object used for a moisturizer by this invention is acquired by carrying out separation purification of the bridge formation object with which Polly gamma-glutamic acid generated in the solvent the Polly gamma-glutamic acid obtained by cultivation, a chemosynthesis method, etc. by the microorganism like the above after having dissolved so that it might become 5 - 15 mass % preferably, and carrying out radiation irradiation of this solution, two to 20 mass %, and. Although an acetone besides water and alcohol, methyl acetate, ethyl acetate, etc. are used as a solvent, water, methyl alcohol, and ethyl alcohol are desirable, and especially water is desirable.

[0011] As for the solution which dissolved Polly gamma-glutamic acid, a radiolucency container, for example, a glass vial bottle etc., is used. Although there is no limit, for example, there are alpha rays, beta rays, a gamma ray, an electron ray, a neutron beam, an X-ray, etc. especially about a radiation, it is an electron ray preferably. Although the quantity of radiation of the electron ray to irradiate changes somewhat with conditions, such as water absorption which it is going to acquire, 20 or more kGies usually have desirable quantity of radiation. Since irradiation time may fully be unable to form a bridge formation object in less than 1 second, it is desirable to irradiate at least 1 second or more.

[0012] The Polly gamma-glutamic-acid bridge formation object of the desired rate of gelation can be acquired by the approach by such electron beam irradiation. The rate of gelation of the Polly gamma-glutamic-acid bridge formation object used for a moisturizer by this invention is 60 - 100% still more preferably 40 to 100% preferably 20 to 100%. If the rate of gelation is lower than 20%, moistness will not be enough and productivity will also fall. In addition, the rate of gelation used by this invention means the percentage of the dry mass of the numeric value which broke the dry mass of the moisturizer which consists of a Polly gamma-glutamic-acid bridge formation object by the amount of the Polly gamma-glutamic acid used for electron beam irradiation, i.e., the moisturizer which consists of a Polly gamma-glutamic-acid bridge formation object over the amount of preparation Polly gamma-glutamic acid.

[0013] Then, the Polly gamma-glutamic-acid bridge formation object which is a solid can be acquired by removing water. This Polly gamma-glutamic-acid bridge formation object is transparent and colorless, is excellent in absorptivity, and also has biodegradability. The Polly gamma-glutamic-acid bridge formation object acquired by the above approach may be corned by the predetermined configuration, and may be a letter of indeterminate form crushing, and spherical \*\*.

[0014] The Polly gamma-glutamic-acid bridge formation object used for a moisturizer by this invention is widely used for face toilet, a milky lotion, cold cream, a hand cream, a lip stick, eye shadow, a hair spray, a tonic, a charge for a haircut, a shampoo, a rinse, Parma liquid, a sweat picking agent, a bathing agent, etc. the addition of a Polly gamma-glutamic-acid bridge formation object -- usually -- 0.001 to 5 mass % -- it is 0.05 to 2.5 mass % preferably. If there are few additions than 0.001 mass %, a moisturizency effect is not enough, and since it is sticky when [ than 5 mass % ] more, and it is easy to generate admiration, it is not desirable.

[0015] Even if the Polly gamma-glutamic-acid bridge formation object used for a moisturizer by this invention uses together gold [ SORUBI / other moisturizers, for example, propylene glycol, and ], an amine acid, sodium lactate, etc., it does not have effectiveness spoiled. Moreover, as for the Polly gamma-glutamic-acid bridge formation object used for a moisturizer by this invention, alkali-metal salts, such as sodium, a potassium, and a lithium, ammonium salt, an ethanolamine salt, a diethanolamine salt, a triethanolamine salt, a basic amine salt, etc. are contained.

---

[Translation done.]

## \* NOTICES \*

JPO and NCIPJ are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

## EXAMPLE

[Example] Although an example etc. explains this invention further below at a detail, this invention is not restricted at all by these.

[0017] It is one week about the processing object which irradiated for a total of 12 seconds, and was obtained so that the water solution of 10 mass % of example of manufacture 1 Meiji gamma-PGA (Polly [ by Meiji Seika Kaisha, Ltd. ] gamma-glutamic acid) was put into a glass tray, and it might be set the irradiation range of 10cm with Cockcroft UORUTON mold electron-beam-irradiation equipment and might be set to exposure 30kGy in 2.5kGy/1sec. It was immersed in 4-degree C water, and Polly gamma-glutamic acid non-constructed a bridge was removed. The Polly gamma-glutamic-acid gel which absorbed and swelled water was freeze-dried after filtration at the wire gauze of 80 meshes, and the Polly gamma-glutamic-acid bridge formation object of 91% of rates of gelation was acquired. In addition, the rate of gelation is a ratio of the dry mass of the Polly gamma-glutamic-acid gel which might receive the mass of preparation Polly gamma-glutamic acid.

[0018] It blended with the Polly gamma-glutamic-acid bridge formation object acquired in examples 1-2, the example 1 of a comparison - the example 1 of 2 manufactures at a predetermined mass rate which shows water, ethyl alcohol, and perfume in the 1st table, and the makeup agent for the skins was manufactured. This makeup agent for the skins was gently reached admiration after spreading desiccation and by the following valuation basis at the skin, and admiration was evaluated in the least. A result is shown in the 1st table.

A: Gently with those with admiration, and no stickiness.

B: They are those with admiration, and those with stickiness gently.

C: Admiration and stickiness are nothing gently.

[0019] Meiji gamma-PGA was used instead of the example of comparison 3 Polly gamma-glutamic-acid bridge formation object, and it carried out like the example 1. A result is shown in the 1st table.

[0020]

[Table 1]

第1表

	実施例1	実施例2	比較例1	比較例2	比較例3
(配合量:質量%)					
水	89.4	89.0	83.5	89.5	89.4
エチルアルコール	10.0	10.0	10.0	10.0	10.0
香料	0.5	0.5	0.5	0.5	0.5
ポリアクリルアミド酸架橋体	0.1	0.5	6.0	—	0.1(未架橋物)
評価結果	A	A	B	C	C

[Translation done.]

**This Page is Inserted by IFW Indexing and Scanning  
Operations and is not part of the Official Record**

**BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

☐ **BLACK BORDERS**

☒ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**

☐ **FADED TEXT OR DRAWING**

☐ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**

☐ **SKEWED/SLANTED IMAGES**

☐ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**

☐ **GRAY SCALE DOCUMENTS**

☐ **LINES OR MARKS ON ORIGINAL DOCUMENT**

☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**

☐ **OTHER:** \_\_\_\_\_

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.**

